# EXHIBIT C Engineering Specifications for an Overhead Transmission Line Segment 1 of 4

# PRINCIPAL CIRCUIT

- 1. Name of Petitioner: ITC Midwest, LLC
- 2. Name or Circuit Number of Line: Prairie Creek CKT 4750
- 3. Length of Segment: 1.17 (2.34 ckt mi.) miles
- 4. Segment is located in the following sections, townships, and ranges: <u>Section 36, T83N, R7W</u> and Section 31, T83N, R6W
- 5. Segment will be rebuilt in 2017.
- 6. Segment will be maintained in accordance with the Iowa Electrical Safety Code and the <u>2012</u> Edition of the National Electrical Safety Code.
- 7. Maximum Capable of Operating Voltage: 72.5 kVAC Nominal Operating Voltage: 69 kVAC
- 8. Construction Grade: B Typical Span: <u>275 ft.</u> Maximum Span: <u>300 ft.</u>

### **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
9.	Open Ground	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
10.	Roads	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
11.	(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
12.	(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

13. Code Word: T2-Penguin Size: 423.2 kcmil Stranding: 2-6/1 Material: ACSR

#### Shield Wire(s):

- 14. Size: <u>AFL Alumacore DNO-6071 0.555" DIA</u> Stranding: <u>1/15</u> Material: <u>Aluminum pipe/</u> Aluminum clad steel
- 15. Frequency of Shield Wire Grounding (if applicable): At each structure

#### **Typical Insulators**

			Suspension Type			
			Tan. / Ang.			
16.		Post Type	Single Piece Unit	Single Piece Unit		
17.	Manufacturer	Manufacturar Hubbell Power		Hubbell Power		
17.	Manuracturer	Systems	Systems	Systems		
18.	Catalog number	P250034S1020 or	P250034S9020 or	S025030H2010 or		
10.	Galalog Hallibel	Equivalent	Equivalent	Equivalent		
19.	Dry Flashover	355 kV	355 kV	320 kV		
20.	Wet Flashover	320 kV	320 kV	305 kV		
21.	Impulse Flashover, +	545 kV	545 kV	535 kV		

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22	Impulse Flashover. –	655 kV	655 kV	515 k\/
<b>ZZ</b> .	i illibuise riasilovei. –	000 KV	000 KV	1 313 KV

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#### **Typical Structures:**

- 23. Structures Typically are: Wood Poles
- 24. Typical Height After Installation: <u>56.5 65.5 ft.</u>

#### **Typical Wood Pole:**

25. Species: Douglas Fir Treatment: Penta Class: 1-H2 Length: 65-75 ft.

#### **Steel Structures:**

- 26. Steel Pole or Tower Material: N/A
- 27. H-Frame Structure Bracing Type: N/A

Spacing Between H-Frame Poles: N/A ft.

- 28. Support Arm Type: N/A Material: N/A Dimensions: N/A
- 29. Guys are: Insulated Guy Markers are: Yellow

# SECOND TRANSMISSION CIRCUIT (if applicable)

- 30. Name of Owner: ITC Midwest, LLC
- 31. Name or Circuit Number of Line: Prairie Creek CKT 3150
- 32. If Franchised Separately, Docket Number of Order Granting Franchise: <u>This Docket (Northern Circuit)</u>
- 33. Maximum Capable of Operating Voltage: 72.5 kVAC Nominal Operating Voltage: 34.5 kVAC

# **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
34.	Open Ground	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
35.	Roads	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
36.	(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
37.	(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

38. Code Word: Partridge Size: 266.8 kcmil Stranding: 26/7 Material: ACSR

# **Typical Insulators**

			Suspension Type		
			Tan. / Ang.	Strain	
39.		Post Type	Single Piece Unit	Single Piece Unit	
40.	). Manufacturer	Hubbell Power	Hubbell Power	Hubbell Power	
40.	Mariuracturer	Systems	Systems	Systems	
41.	Catalog number	P250034S1020 or	P250034S9020 or	S025030H2010 or	
41.	Catalog Humber	Equivalent	Equivalent	Equivalent	
42.	Dry Flashover	355 kV	355 kV	320 kV	
43.	Wet Flashover	320 kV	320 kV	305 kV	
44.	Impulse Flashover, +	545 kV	545 kV	535 kV	
45.	Impulse Flashover, –	655 kV	655 kV	515 kV	

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46. Support Arm Type: N/A Material: N/A Dimensions: N/A

### DISTRIBUTION UNDERBUILD (if applicable)

- 47. Name of Owner: Interstate Power and Light Company
- 48. Nominal Voltage: 12.5 kV

55.56.57.58.

- 49. Number of Distribution Phase Conductors: 3
- 50. Neutral is Multi-grounded Multi-Grounding Frequency: At each structure, except deadends

### **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Additional Adders	=	Clearance
51.	Open Ground	18.5 ft.	+	ft.	=	18.5 ft.
52.	Roads	18.5 ft.	+	ft.	=	18.5 ft.
53.	(no RR crossings)	ft.	+	ft.	=	ft.
54.	(no water surfaces)	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Vertical Overhead Clearance Requirement\* for the Neutral Conductor** (if applicable)

Surface	Basic Clearance	+	Additional Adders	=	Clearance
Open Ground	15.5 ft.	+	ft.	=	15.5 ft.
Roads	15.5 ft.	+	ft.	=	15.5 ft.
(no RR crossings)	ft.	+	ft.	=	ft.
(no water surfaces)	ft.	+	ft.	=	ft.

<sup>\*</sup> The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

59. Support Arm Type: Crossarm Material: Wood Dimensions: 12' x 4.75" x 3.75"

#### TYPICAL STRUCTURE DRAWING

60. A drawing of a typical tangent structure, as described in the instructions, <u>has</u> been attached.

#### ADDITIONAL DRAWINGS REQUIRED FOR NEW CONSTRUCTION

- 61. Angle structures <u>will</u> be used in this segment of line. A drawing of a typical angle structure, as described in the instructions, <u>has</u> been attached.
- 62. Dead-end structures <u>will</u> be used in this segment of line. A drawing of a typical dead-end structure, as described in the instructions, <u>has</u> been attached.
- 63. There <u>are no grain bins</u> along this segment of line. Drawings showing the clearance envelope for each grain bin in relation to the proposed line <u>are not required</u>.

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# EXHIBIT C Engineering Specifications for an Overhead Transmission Line Segment 2 of 4

#### PRINCIPAL CIRCUIT

- 1. Name of Petitioner: ITC Midwest, LLC
- 2. Name or Circuit Number of Line: Prairie Creek CKT 4750
- 3. Length of Segment: <u>0.98 miles</u>
- 4. Segment is located in the following sections, townships, and ranges: Sections 30 and 31 in T83N, R6W
- 5. Segment will be rebuilt in 2017.
- 6. Segment will be maintained in accordance with the Iowa Electrical Safety Code and the <u>2012</u> Edition of the National Electrical Safety Code.
- 7. Maximum Capable of Operating Voltage: 72.5 kVAC Nominal Operating Voltage: 69 kVAC
- 8. Construction Grade: B Typical Span: <u>275 ft.</u> Maximum Span: <u>300 ft.</u>

#### **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
9.	Open Ground	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
10.	Roads	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
11.	(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
12.	(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

13. Code Word: T2-Penguin Size: 423.2 kcmil Stranding: 2-6/1 Material: ACSR

## Shield Wire(s):

- 14. Size: <u>AFL Alumacore DNO-6071 0.555" DIA</u> Stranding: <u>1/15</u> Material: <u>Aluminum pipe/</u> Aluminum clad steel
- 15. Frequency of Shield Wire Grounding (if applicable): At each structure

#### **Typical Insulators**

			Suspension Type			
			Tan. / Ang.	Strain		
16.		Post Type	Single Piece Unit	Single Piece Unit		
17.	Manufacturer	Hubbell Power	Hubbell Power	Hubbell Power		
'''	Manadaro	Systems	Systems	Systems		
18.	Catalog number	80S0690600 or	80S0690000 or	S025030H2010 or		
10.	Catalog Hambel	Equivalent	Equivalent	Equivalent		
19.	Dry Flashover	230 kV	230 kV	320 kV		
20.	Wet Flashover	180 kV	180 kV	305 kV		
21.	Impulse Flashover, +	360 kV	360 kV	535 kV		

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22	Impulse Flashover. –	415 k\/	415 k\/	515 k\/
~~.	i iiiibuise i iasiiovei. —	1 713 6 7	1 <del>1</del> 13 KV	

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23. 24.	Typical Structures: Structures Typically a Typical Height After I			5.5 ft.				
25.	Typical Wood Pole: Species: Douglas Fir Treatment: Penta Class: 1-H2 Length: 65-75 ft.							
26.	Steel Structures: Steel Pole or Tower Material: N/A							
27.	H-Frame Structure B	racing Type: <u>N/</u>	<u>4</u>	5	Spacii	ng Between H	-Fram	ne Poles: <u>N/A ft.</u>
28.	Support Arm Type: N	<u>/A</u> Material: <u>N/</u>	<u>A</u> Di	mensions: <u>N/A</u>				
29.	Guys are: Insulated	Guy Markers a	re: <u>Y</u>	ellow				
		SECOND TRA	NSI	MISSION CIRC	UIT (	if applicable)		
31. 32. 33.	Name of Owner: N/A  Name or Circuit Number of Line:  If Franchised Separately, Docket Number of Order Granting Franchise:  Maximum Capable of Operating Voltage:  Nominal Operating Voltage:							
	vertical C	verhead Clear Basic	ance	Requirement	° tor	Additional	nauc	ctors
	Surface	Clearance	+	Voltage Adde	<b>+</b>	Adders	=	Clearance
34.	Open Ground	ft.	+	ft.	+	ft.	=	ft.
35.	Roads	ft.	+	ft.	+	ft.	=	ft.
36.	Railroads	ft.	+	ft.	+	ft.	=	ft.
37.	* The Iowa Electrical Safety	ft.	+	ft.	+	ft.	=	ft.
38.	which the above clearance  Phase Conductors: Code Word:	es apply.	rand		ateria			
						Suspension	п Тур	e
					Tan.	/ Ang.	- ,,	Strain

			Suspension Type				
			Tan. / Ang.	Strain			
39.		Post Type	( select )	( select )			
40.	Manufacturer						
41.	Catalog number						
42.	Dry Flashover	kV	kV	kV			
43.	Wet Flashover	kV	kV	kV			
44.	Impulse Flashover, +	kV	kV	kV			
45.	Impulse Flashover, –	kV	kV	kV			

46. Support Arm Type: \_\_\_\_ Material: \_\_\_\_ Dimensions: \_\_\_\_

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### DISTRIBUTION UNDERBUILD (if applicable)

- 47. Name of Owner: Interstate Power and Light Company
- 48. Nominal Voltage: 12.5 kV

55. 56. 57. 58.

- 49. Number of Distribution Phase Conductors: 3
- 50. Neutral is <u>Multi-grounded</u> Multi-Grounding Frequency: <u>At each structure</u>, except deadends

### **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Additional Adders	=	Clearance
51.	Open Ground	18.5 ft.	+	0.0 ft.	=	18.5 ft.
52.	Roads	18.5 ft.	+	0.0 ft.	=	18.5 ft.
53.	(no RR crossings)	ft.	+	ft.	=	ft.
54.	(no water surfaces)	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Vertical Overhead Clearance Requirement\* for the Neutral Conductor** (if applicable)

Surface	Basic Clearance	+	Additional Adders	=	Clearance
Open Ground	15.5 ft.	+	0.0 ft.	=	15.5 ft.
Roads	15.5 ft.	+	0.0 ft.	=	15.5 ft.
(no RR crossings)	ft.	+	ft.	=	ft.
(no water surfaces)	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

59. Support Arm Type: Crossarm Material: Wood Dimensions: 12' x 4.75" x 3.75"

#### TYPICAL STRUCTURE DRAWING

60. A drawing of a typical tangent structure, as described in the instructions, has been attached.

# ADDITIONAL DRAWINGS REQUIRED FOR NEW CONSTRUCTION

- 61. Angle structures <u>will</u> be used in this segment of line. A drawing of a typical angle structure, as described in the instructions, <u>has</u> been attached.
- 62. Dead-end structures <u>will</u> be used in this segment of line. A drawing of a typical dead-end structure, as described in the instructions, <u>has</u> been attached.
- 63. There <u>are no grain bins</u> along this segment of line. Drawings showing the clearance envelope for each grain bin in relation to the proposed line <u>are not required</u>.

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# EXHIBIT C Engineering Specifications for an Overhead Transmission Line Segment 3 of 4

#### PRINCIPAL CIRCUIT

- 1. Name of Petitioner: ITC Midwest, LLC
- 2. Name or Circuit Number of Line: Prairie Creek CKT 4750
- 3. Length of Segment: 0.12 miles
- 4. Segment is located in the following sections, townships, and ranges: Section 31 in T83N, R6W
- 5. Segment will be rebuilt in 2017.
- 6. Segment will be maintained in accordance with the Iowa Electrical Safety Code and the <u>2012</u> Edition of the National Electrical Safety Code.
- 7. Maximum Capable of Operating Voltage: 72.5 kVAC Nominal Operating Voltage: 69 kVAC
- 8. Construction Grade: <u>B</u> Typical Span: <u>275 ft.</u> Maximum Span: <u>300 ft.</u>

# **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
9.	Open Ground	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
10.	Roads	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
11.	(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
12.	(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

13. Code Word: T2-Penguin Size: 423.2 kcmil Stranding: 2-6/1 Material: ACSR

#### Shield Wire(s):

- 14. Size: <u>AFL Alumacore DNO-6071 0.555" DIA</u> Stranding: <u>1/15</u> Material: <u>Aluminum pipe/</u> Aluminum clad steel
- 15. Frequency of Shield Wire Grounding (if applicable): At each structure

# **Typical Insulators**

			Suspension Type		
			Tan. / Ang.	Strain	
16.		Post Type	N/A	Single Piece Unit	
17.	Manufacturer	Hubbell Power		Hubbell Power	
	Maridiacturei	Systems		Systems	
18.	Catalog number	80S0690600 or		S025030H2010 or	
10.	Catalog Humber	Equivalent		Equivalent	
19.	Dry Flashover	230 kV	kV	320 kV	
20.	Wet Flashover	180 kV	kV	305 kV	
21.	Impulse Flashover, +	360 kV	kV	535 kV	
22.	Impulse Flashover, –	415 kV	kV	515 kV	

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<b>1</b> .	Typical Structures: Structures Typically a Typical Height After I			.5 ft.						
5.	Typical Wood Pole: Species: Douglas Fir Treatment: Penta Class: 1-H2 Length: 65-75 ft.									
5.	Steel Structures: Steel Pole or Tower Material: N/A									
7.	H-Frame Structure Bracing Type: N/A Spacing Between H-Frame Poles: N/A ft.									
3.	Support Arm Type: N/A Material: N/A Dimensions: N/A									
9.	Guys are: Insulated Guy Markers are: Yellow									
	SECOND TRANSMISSION CIRCUIT (if applicable)									
). 1. 2.	Name of Owner: N/A  Name or Circuit Number of Line:  If Franchised Separately, Docket Number of Order Granting Franchise:  Maximum Capable of Operating Voltage:  Nominal Operating Voltage:									
3.	•				No			_		
	Maximum Capable of	Operating Volt	age:	Requirement		minal Operat	ing Vo	oltage:		
	Maximum Capable of	Operating Volt	age:		for t	minal Operat	ing Vo	oltage:		
	Maximum Capable of Vertical O	Operating Volter Volter Properties Volter Vo	age:	e Requirement	for t	minal Operational  Additional	ing Vo	oltage:		
3.	Maximum Capable of Vertical O	Operating Volteverhead Clear Basic Clearance	age: ance	e Requirement <sup>*</sup> Voltage Adder	for t + +	the Phase Co Additional Adders ft.	ing Vo	oltage: etors Clearance		
3. <b>1</b> .	Maximum Capable of  Vertical O  Surface  Open Ground	Pverhead Clear Basic Clearance ft.	age: ance + +	Requirement <sup>*</sup> Voltage Adder ft.	+ + + +	the Phase Co Additional Adders ft.	onduc = =	oltage: etors Clearance ft.		
3. 4. 5.	Maximum Capable of  Vertical O  Surface  Open Ground  Roads	Pverhead Clear Basic Clearance ft. ft. ft. ft. Code and the applica	age: + + + + + + + + + + + + + + + + + + +	Voltage Adder ft. ft. ft. ft. ft.	+ + + + +	the Phase Consideration Additional Adders ft. ft. ft. ft.	enduc	ctors  Clearance ft. ft. ft. ft.		
3. 4. 5.	Vertical O  Surface Open Ground Roads Railroads Water * The lowa Electrical Safety	Poperating Volton Poperating Volton Poperating Volton Poperating Volton Poperating Volton Poperation Volton Volton Poperation Volton Volton Poperation Volton Volton Poperation Volton Volton Po	age: + + + + ble ed	PREQUIREMENT  Voltage Adder  ft.  ft.  ft.  ft.  ft.  ition of the NESC sho	+ + + + + ould bot	Additional Adders ft. ft. ft. h be referenced to	enduce	ctors  Clearance  ft. ft. ft. ft. ft. ine the conditions at		

			Suspension Type			
			Tan. / Ang.	Strain		
39.		Post Type	( select )	( select )		
40.	Manufacturer					
41.	Catalog number					
42.	Dry Flashover	kV	kV	kV		
43.	Wet Flashover	kV	kV	kV		
44.	Impulse Flashover, +	kV	kV	kV		
45.	Impulse Flashover, –	kV	kV	kV		

46. Support Arm Type: \_\_\_\_ Material: \_\_\_\_ Dimensions: \_\_\_\_

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		DISTRIBUTION U	JNDE	RBUILD (if applicable	e)	
47.	Name of Owner: N/A			· · ·	·	
Τ1.	Name of Owner. INA					
<del>1</del> 8.	Nominal Voltage:					
19.	Number of Distribution	n Phase Conductors:				
50.	Neutral is	Multi-Grounding Frequ	ency	•		
	Vertical O	verhead Clearance F	) Parij	iroment* for the Pha	se Co	anductors
	Surface	Basic Clearance	•	Additional Adders	=	
51.	Open Ground	ft.		ft.		ft.
2.	Roads	ft.	+	ft.		ft.
53.	Railroads	ft.	+	ft.	=	ft.
54.	Water	ft.	+	ft.	=	ft.
	which the above clearance	Code and the applicable editions apply.  In Clearance Require				
	Surface	Basic Clearance		Additional Adders	=	Clearance
5.	Open Ground	ft.	+	ft.	=	ft.
6.	Roads	ft.	+	ft.	=	ft.
7.	Railroads	ft.	+	ft.		ft.
8.	Water	ft.	+	ft.	=	ft.
9.	* The lowa Electrical Safety C which the above clearance:  Support Arm Type:					
		TYPICAL ST	RUC	TURE DRAWING		
60.	A drawing of a typical	tangent structure, as	desc	ribed in the instructio	ns, <u>ha</u>	<u>s</u> been attached.
	ADDITIO	ONAL DRAWINGS RE	QUII	RED FOR NEW CON	ISTRU	JCTION
61.	Angle structures will no as described in the income.				f a typ	ical angle structure,
62.	Dead-end structures vertucture, as describe		•	9	of a typ	ical dead-end
63.	There are no grain bir for each grain bin in re				g the c	learance envelope

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# EXHIBIT C Engineering Specifications for an Overhead Transmission Line Segment 4 of 4

#### PRINCIPAL CIRCUIT

- 1. Name of Petitioner: ITC Midwest, LLC
- 2. Name or Circuit Number of Line: Prairie Creek CKT 4750
- 3. Length of Segment: 0.10 miles
- 4. Segment is located in the following sections, townships, and ranges: Section 31 in T83N, R6W
- 5. Segment will be rebuilt in 2017.
- 6. Segment will be maintained in accordance with the Iowa Electrical Safety Code and the <u>2012</u> Edition of the National Electrical Safety Code.
- 7. Maximum Capable of Operating Voltage: 72.5 kVAC Nominal Operating Voltage: 69 kVAC
- 8. Construction Grade: <u>B</u> Typical Span: <u>300 ft.</u> Maximum Span: <u>300 ft.</u>

# **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

	Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
9.	Open Ground	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
10.	Roads	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
11.	(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
12.	(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

<sup>\*</sup> The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

13. Code Word: Grosbeak Size: 636 kcmil Stranding: 26/7 Material: ACSR

#### Shield Wire(s):

- 14. Size: 3/8" Stranding: 7 Material: EHS Steel
- 15. Frequency of Shield Wire Grounding (if applicable): At each structure

#### **Typical Insulators**

			Suspension Type		
			Tan. / Ang.	Strain	
16.		Post Type	N/A	N/A	
17.	Manufacturer	Hubbell Power			
	Manufacturer	Systems			
18.	Catalog number	80S0690600 or			
10.	Catalog Humber	Equivalent			
19.	Dry Flashover	230 kV	kV	kV	
20.	Wet Flashover	180 kV	kV	kV	
21.	Impulse Flashover, +	360 kV	kV	kV	
22.	Impulse Flashover, –	415 kV	kV	kV	

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#### **Typical Structures:**

- 23. Structures Typically are: Laminated Wood Poles
- 24. Typical Height After Installation: 70-83.5 ft.

#### **Typical Wood Pole:**

25. Species: Laminated Wood Treatment: Penta Class: H4-H6 Length: 80-95 ft.

#### **Steel Structures:**

- 26. Steel Pole or Tower Material: N/A
- 27. H-Frame Structure Bracing Type: N/A

Spacing Between H-Frame Poles: N/A ft.

- 28. Support Arm Type: N/A Material: N/A Dimensions: N/A
- 29. Guys are: Insulated Guy Markers are: Yellow

# SECOND TRANSMISSION CIRCUIT (if applicable)

- 30. Name of Owner: ITC Midwest, LLC
- 31. Name or Circuit Number of Line: Bertram Prairie Creek Industrial
- 32. If Franchised Separately, Docket Number of Order Granting Franchise: E-20994
- 33. Maximum Capable of Operating Voltage: 169 kVAC Nominal Operating Voltage: 161 kVAC

# **Vertical Overhead Clearance Requirement\* for the Phase Conductors**

Surface	Basic Clearance	+	Voltage Adder	+	Additional Adders	=	Clearance
Open Ground	18.5 ft.	+	2.6 ft.	+	ft.	=	21.1 ft.
Roads	18.5 ft.	+	2.6 ft.	+	ft.	=	21.1 ft.
(no RR crossings)	ft.	+	ft.	+	ft.	=	ft.
(no water surfaces)	ft.	+	ft.	+	ft.	=	ft.

<sup>\*</sup> The lowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

#### **Phase Conductors:**

34.35.36.37.

38. Code Word: Rail Size: 954 kcmil Stranding: SD Type 7 Material: ACSR/SD

# **Typical Insulators**

			Suspension Type		
			Tan. / Ang.	Strain	
39.		Post Type	Single Piece Unit	N/A	
40.	Manufacturer	Hubbell Power Systems	Hubbell Power Systems		
41.	Catalog number	P250053S0020	S025053S2010		
42.	Dry Flashover	565 kV	560 kV	kV	
43.	Wet Flashover	495 kV	525 kV	kV	
44.	Impulse Flashover, +	855 kV	900 kV	kV	
45.	Impulse Flashover, –	950 kV	900 kV	kV	

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46.	Support Arm Type: N/	A Material:	Dime	nsions:		
		DISTRIBUTION L	JNDE	RBUILD (if applicable	e)	
47.	Name of Owner: N/A					
48.	Nominal Voltage:					
49. 50.	Number of Distribution Neutral is	/lulti-Grounding Frequ	iency			-
	Surface	verhead Clearance F Basic Clearance	-	Additional Adders		
51.	Open Ground	ft.	+			ft.
51. 52.	Roads	ft.	+	ft.		ft.
52. 53.	Railroads	ft.	+	ft.		ft.
53. 54.	Water	ft.	+	ft.		ft.
	which the above clearances	Code and the applicable editions apply.  d Clearance Require				
	Surface	Basic Clearance	+	Additional Adders	=	Clearance
55.	Open Ground	ft.	+	ft.	=	ft.
56.	Roads	ft.	+	ft.	=	ft.
57.	Railroads	ft.	+	ft.		ft.
58.	Water	ft.	+	ft.	=	ft.
59.	* The lowa Electrical Safety C which the above clearances  Support Arm Type:	,				
		TYPICAL ST	RUC	TURE DRAWING		
60.	A drawing of a typical	tangent structure, as	desc	ribed in the instructio	ns, <u>ha</u>	s been attached.
	ADDITIO	DNAL DRAWINGS RE	QUI	RED FOR NEW CON	ISTRL	ICTION
61.	Angle structures will no as described in the instant				f a typ	ical angle structure,
62.	Dead-end structures very structure, as describe				ng of a	typical dead-end
63.	There <u>are no grain bir</u> for each grain bin in re				g the c	elearance envelope

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